Mid-Year Review

INEEL LARGE SCALE DEMONSTRATION AND DEPLOYMENT PROJECT

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D&D Focus Area

Federal Energy Technology Center
Morgantown, WV

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PROJECT GOALS

- Demonstrate or test 17 innovative decommissioning technologies
- Assist INEEL D&D operations
  - Identify appropriate technologies
  - Provide technologies to compare directly against their baselines
  - Collect/analyze data
  - Provide demonstrated technologies for deployment on other projects
- Test highly deployable technologies
- Encourage further deployments
- Decrease D&D costs
- Accelerate D&D schedules

TECHNICAL APPROACH

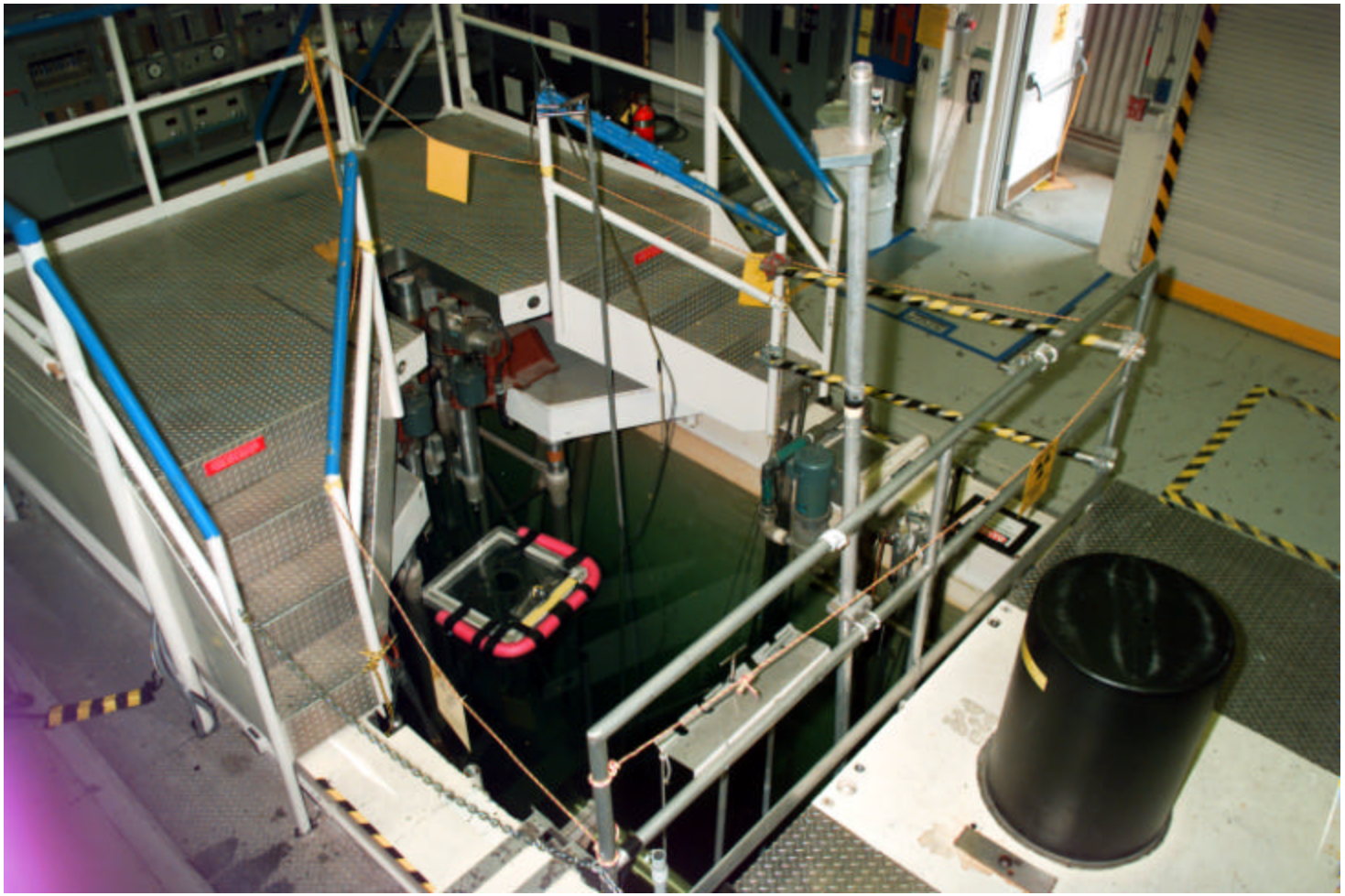
- Identify technology needs for INEEL D&D facilities
- Identify/evaluate appropriate technologies to meet these needs
- Test and evaluate technology performance
- Compare to baseline technology performance
- Report results

BASELINE D&D PROJECT

- Four separate D&D projects are used to test innovative technologies
- Advanced Reactivity Measurement Facility (ARMF), Coupled Fast Reactivity Measurement Facility (CFRMF), Fuel Storage Pool
- Test Reactor Area Filter Pits
- Initial Engine Test (IET) Facility
- Security Training Facility (STF) (Experimental Organic Cooled Reactor)

INEEL LSDDP

INEEL LSDDP



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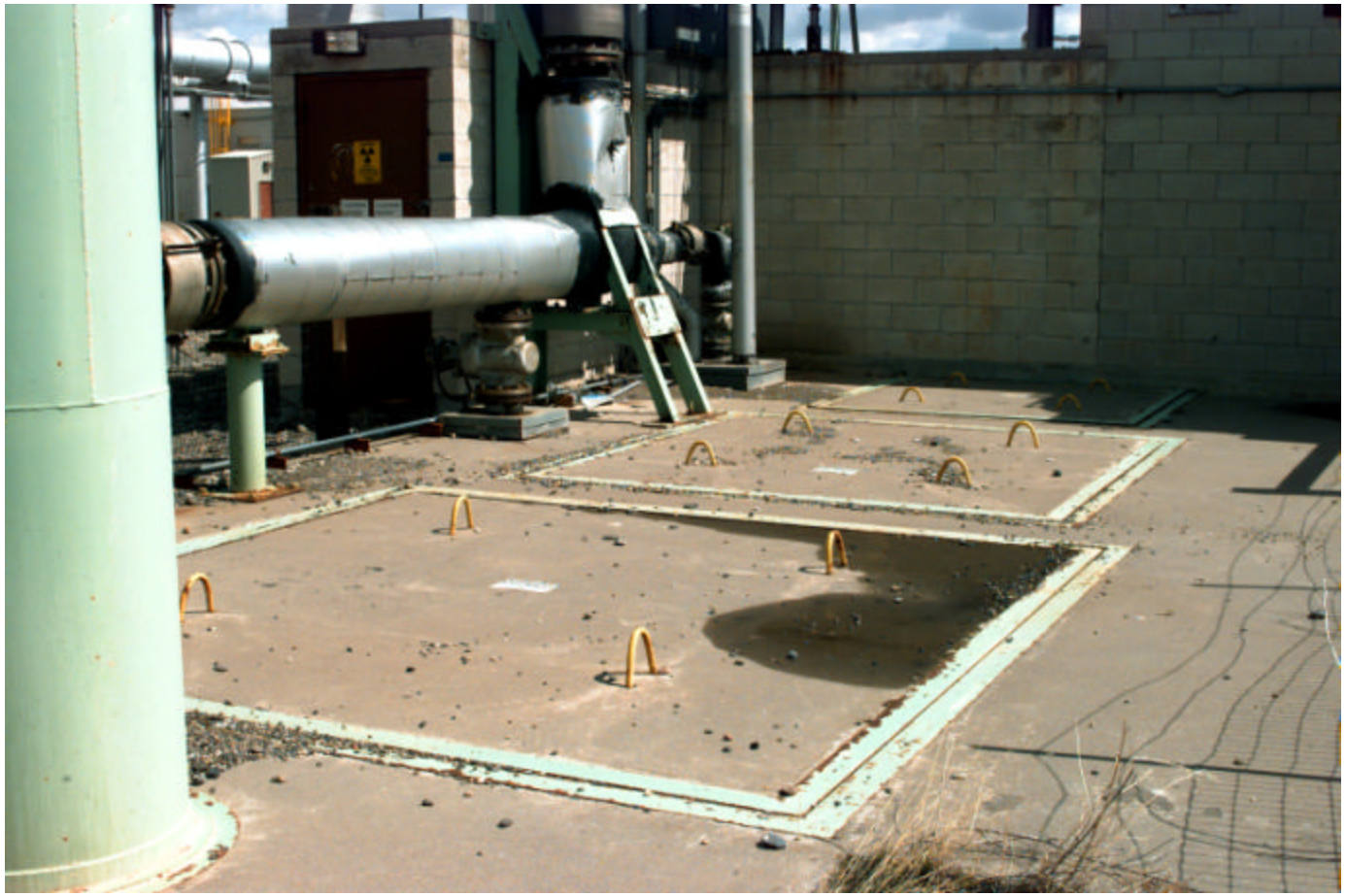
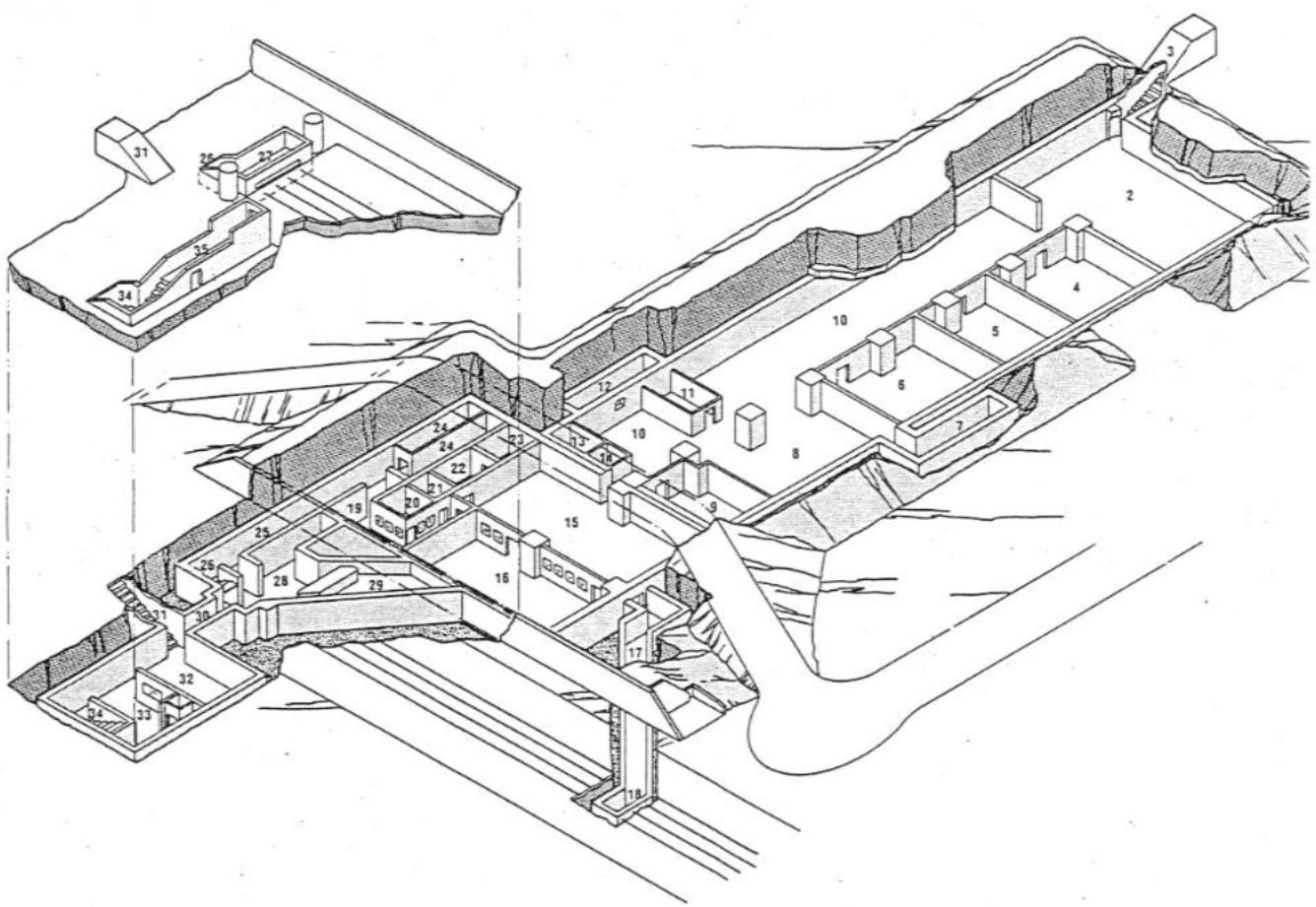


INTIAL ENGINE TEST FACILITY



STF

PROJECT SCOPE

- Characterization/Inspection (RUCS, LPA, Alloy Analyzers, EMR)
- Decontamination
- Dismantlement (Excel, RUCS)
- Disposal (SSC)
- Recycle (Alloy Analyzers)
- IET: Massive concrete structures, contaminant plumes, free release
- ARMF/CFRMF: Underwater reactors and canal, re-use of facility
- TRA Filter Pits: Confined spaces, decontamination, stabilization
- STF: Materials recycle, free release
- Target or goal of demonstrating 17 technologies

LSDDP INTEGRATION INTO BASELINE D&D PROJECT

- Demonstrations must meet window of opportunity provided by D&D schedule
- Schedule change related to resource availability, funding, weather, reviews
- Very close coordination with EM-40 (member of our team)
- Operate with technologies/documentation in the “pipe line”
- Identify multiple demonstration sites
- D&D Project Managers have strong input/approval

PROJECT ORGANIZATION

- Many interests are represented in the project organization
  - DOE-FETC
  - DOE-ID
  - LMITCO D&D Operations
  - Integrating Contractor Team (ICT)
  - LMITCO Environmental Technology Development
  - USACE
  - INEEL STCG
- The ICT also represents a wide variety of interests
  - Parsons Engineering (IC Team Chair): D&D Contractor
  - BNFL: International D&D
  - Idaho State University: Academic nuclear programs
  - TLG Services, Inc.: International D&D
  - Florida International University: Center for Environmental Technologies
  - LMITCO: INEEL D&D operations

Criterion 1. Technical Approach

COMMUNICATIONS

- Fact Sheets issued within 10 days
- Over 600 individuals notified of publishing of fact sheets
- Innovative Technology Summary Reports (ITSR)
- Published within 90 days (same distribution as Fact Sheets)
- Web Site: http://id.inel.gov/lsddp
- Papers presented at Spectrum ‘98, Waste Management ‘99, and ISU Environmental Conference
- Trade Show Booth at Spectrum ‘98
- Presented at two EPRI Workshops on decommissioning
- Secretary Richardson discussed project during a visit to the INEEL
- Savannah River Basic Science Workshop
- INEEL Basic Science Workshop

INEEL D&D OPERATIONS NEEDS

- 21 needs have been identified and documented with the STCG for these INEEL facilities
- Two needs have been removed from this list as a result of the success of new technologies
- Technologies must address a documented STCG need to be tested
- New needs are documented within the STCG system as they are identified
- Air asbestos monitoring need is currently being documented

Idaho National Engineering and Environmental Laboratory Needs & Opportunities associated with Decontamination & Decommissioning

ID	*Title*
ID-7.2.03	Concrete Decontamination
ID-7.2.04	Metal Decontamination
ID-7.2.05	Waste Recycle
ID-7.2.06	Remote Characterization
ID-7.2.07	Demolition
ID-7.2.08	Robotics for D & D
ID-7.2.09	Develop a Rapid Wood Radiological Contamination Monitor
ID-7.2.10	Water Treatment Technologies are Needed to Treat the Water in the Reactor Canal (TRA-660).
ID-7.2.11	Asbestos Wrapped/Insulated Pipe Removal and Packaging.
ID-7.2.12	Cuffing Equipment that is Capable of Cuffing Large Items in Above Ground and Underground Structures as well as Underwater.
ID-7.2.13	Penetrations in Concrete Floor and Demolition of Concrete Roof.
ID-7.2.14	Technology for Decontaminating Radionuclide Contaminated Lead Shot, Brick (including lead plate), and Sheeting Allowing Free-Release.
ID-7.2.15	Field Screening of Paint/Painted Surfaces to Identify Lead Contamination in the Paint.
ID-7.2.16	Field Screening of Lead (shot, bricks, sheeting) for Radionuclide Contamination.
ID-7.2.17	Field Screening of Samples and Equipment Surfaces to Identify PCB Contamination
ID-7.2.18	General Use Remote Tools that can Handle Small Items such as Pliers or Hooking to Rigging.
ID-7.2.19	Remote/Robotic Technologies for Access and Deployment of Characterization and Sampling Tools.
ID-7.2.20	Underwater Radionuclide Characterization of Structures, Equipment, and Containment Pool Walls that Produces Quantitative Data.
ID-7.2.2 1	Removal of Two Reactors as Single Units.

Criterion 2. Relevancy

PERFORMANCE ADVANTAGES OF INNOVATIVE/IMPROVED TECHNOLOGIES

- Cost reduction
- Schedule acceleration
- Exposure reduction
- Safety benefits
- Waste reduction

ACCOMPLISHMENTS

- Project organized
- ICT functioning with great support to the project
- Needs identified and documented
- Four technologies demonstrated, two in progress
- Four fact sheets and two ITSRs published

SIGNIFICANT RESULTS

- Significant contribution by EM-40, Robotics Crosscut Focus Area, and private vendors have resulted in greatly reduced cost of demonstrations
- Have consistently met schedules
- A particularly good and supportive ICT (Operate through regularly scheduled conference calls)
- D&D Project Managers now turn to the LSDDP for technology recommendations for their needs
- INEEL ASTD now watches LSDDP results for deployment opportunities
- Some of the technologies have already replaced the baseline technologies
- “Automatic” deployments without our encouragement

DEMONSTRATION STATUS

- 243 Technologies reviewed
- 120 Technologies screened
- 29 Technologies selected for more detailed evaluation
- 20 Technologies approved for demonstration
- 4 Technologies demonstrated
- 2 Technology demonstrations in progress
- 4 Technologies scheduled for demonstration

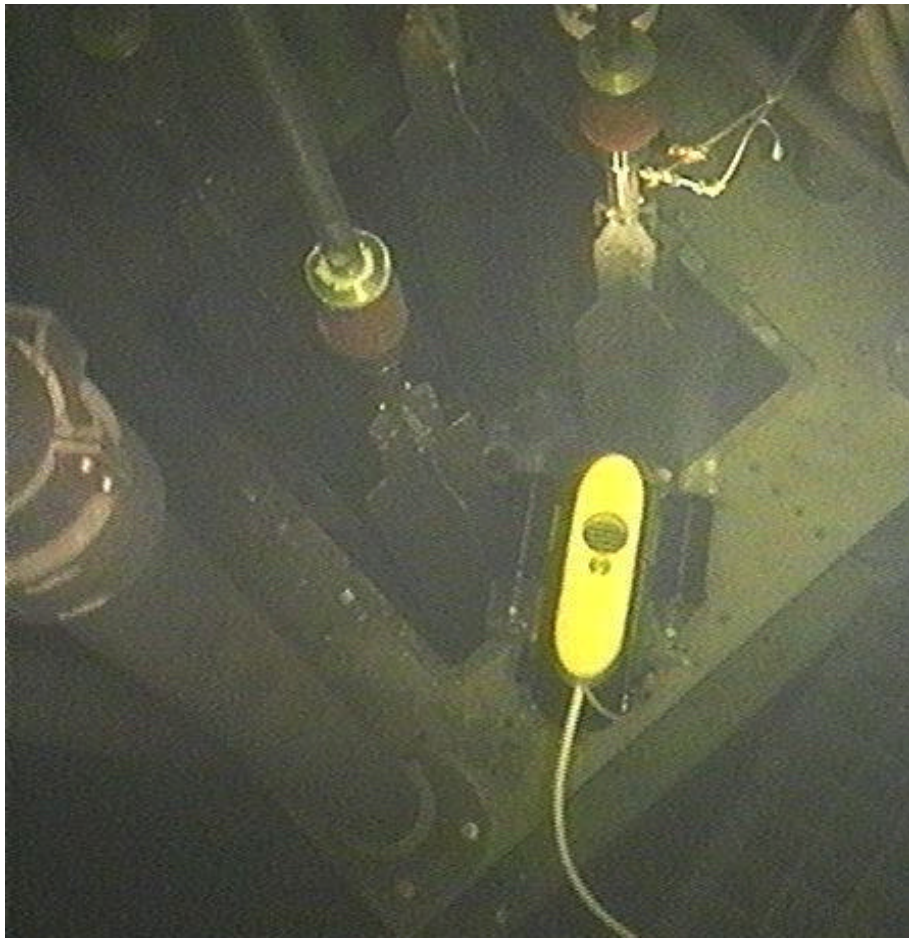
TECHNOLOGIES DEMONSTRATED

- Remote Underwater Characterization System
  - Characterization of ARMF/CFRMF, STCG Need # ID 7.2.20, # ID 7.2.19, # ID 7.2.06, # ID 7.2.08
- Soft-sided Containers for Low-level Waste
  - Waste Disposal at all facilities, STCG Need # ID 7.2.07
- Modular Scaffolding
  - Dismantlement at STF, STCG Need # ID 7.2.07
- Lead Paint Analyzer
  - Characterization at all facilities, STCG Need # ID 7.2.15

TECHNOLOGY DEMONSTRATIONS IN PROGRESS

- Electromagnetic Radiography
  - Characterization at IET and INTEC, STCG Need # ID 7.2.06
- Metal Alloy Analyzer
  - Characterization and recycling at all facilities, STCG Need # ID 7.2.05

RUCS

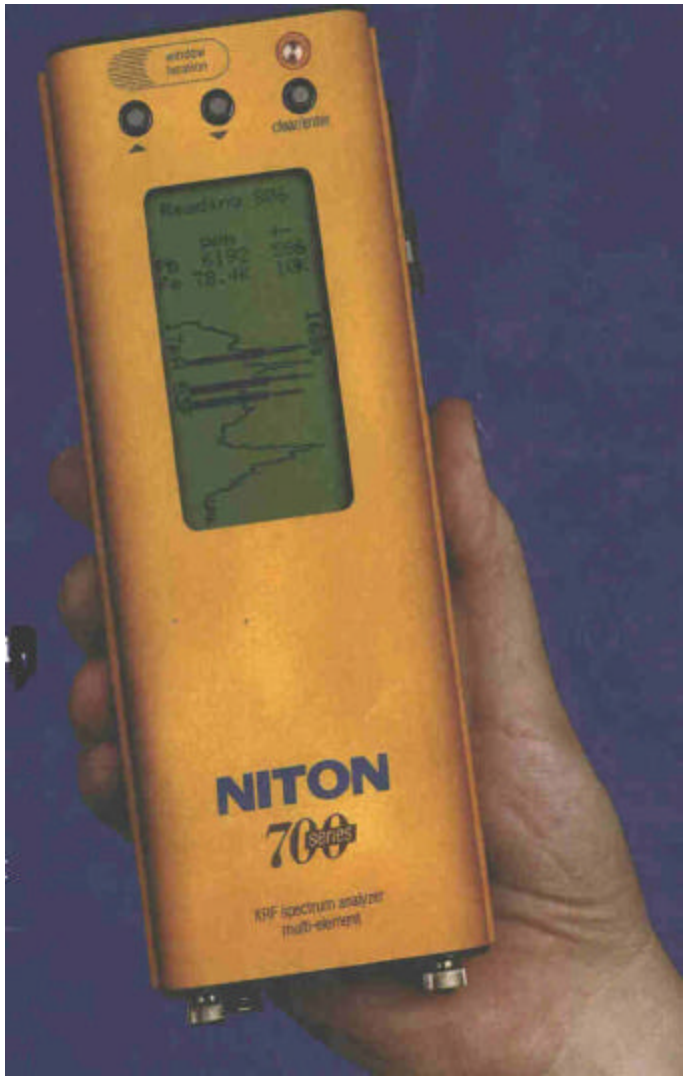


INEEL LSDDP

INEEL LSDDP

MODULAR SCAFFOLDING

Niton LPA



Electromagnetic Radiography (EMR)

TECHNOLOGIES SCHEDULED FOR DEMONSTRATION

- Remote Operated, Wall and Ceiling, Metal Grit Scabble
  - Decontamination at ARMF/CFRMF and STP, STCG Need # ID 7.2.08, # ID 7.2.04, # ID 7.2.03, # ID 7.2.19
- Personnel Safety Monitor for Confined Spaces
  - Characterization/Dismemberment/Dismantlement TRA Filter Pits and STP, STCG Need # ID 7.2.07
- PCB in Paint Analyzer
  - Characterization at all facilities, STCG Need # ID 7.2.17
- Copper Recycle
  - Waste Recycle at all facilities, STCG Need # ID 7.2.05

ISSUES

- Last years INEEL-wide work stoppage
- Having technologies ready to test when a window opens is always a challenge
- Finding solid technologies to test
  - lab scale/not field proven
  - not commercially available
  - vendor won't cost share
  - moving schedule for needs

Criterion 3. Technical Progress

COST PERFORMANCE

Year	***Budget***
FY98	$550K
FY99	$1,800K +$73K Carryover* -$350K Adjustment (holdback) $1,523K Actual Budget
FY00	$855K Projected

YEAR	***BUDGETED***	***ACTUAL***
FY98	$550K	$477K*
FY99**	$618K	$505***

* Due to Site-wide Stop Work Order

**At close of accounting month 7

***2 technology demonstrations delayed 1 month and outstanding commitments

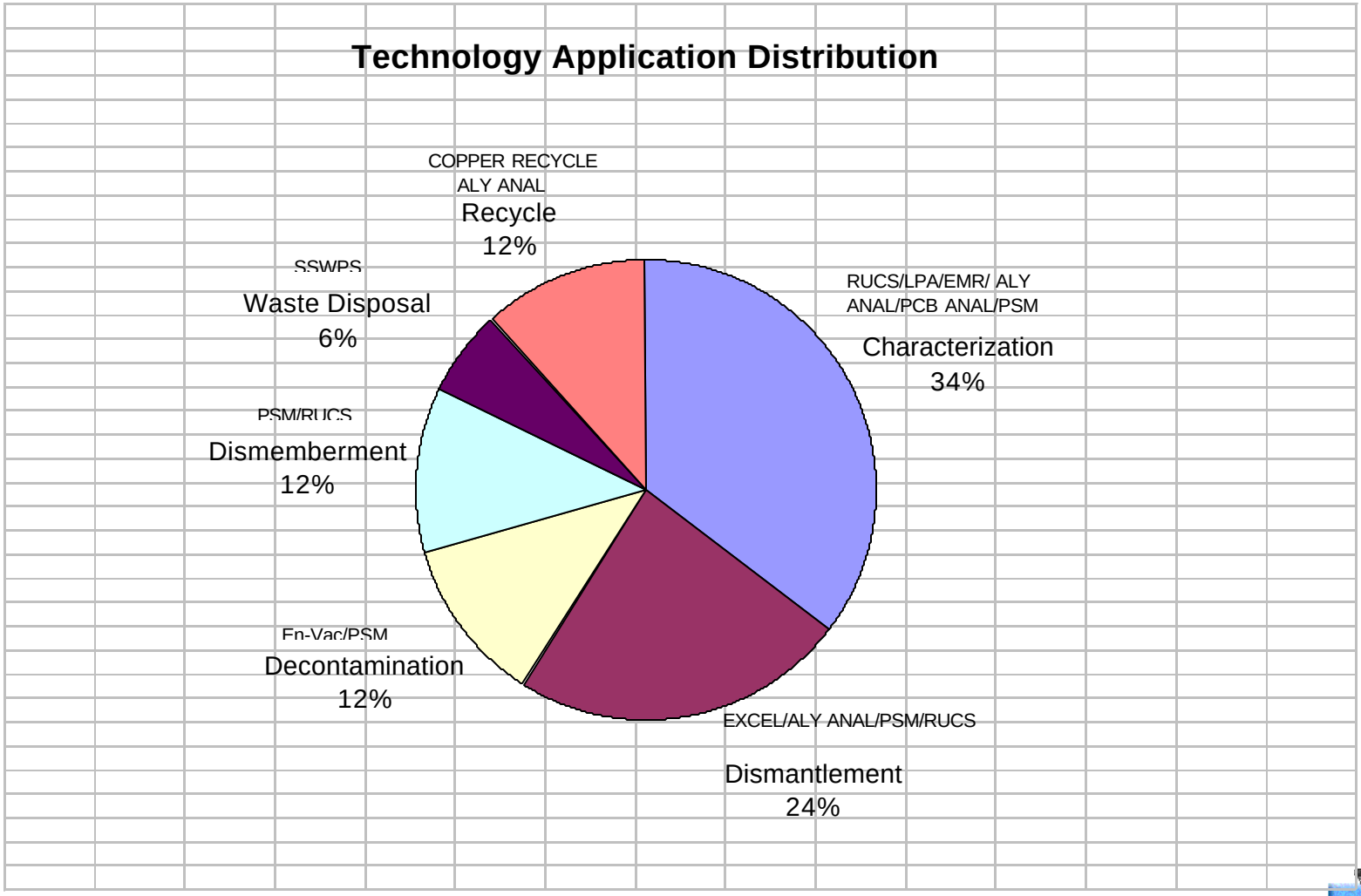
SCHEDULE STATUS

TECHNOLOGY DEMONSTRATIONS

- GOAL 9/30/2000 17 Technologies demonstrated
- MILESTONES
  - 9/30/98 2 Technologies
  - 6/30/99 6 Technologies cumulative
  - 9/30/99 8 Technologies cumulative
  - 4/4/00 11 Technologies cumulative
- STATUS
  - 9/30/98 1 Technology demonstrated
  - 1 Technology started—shut down for site-wide stop work order
  - 5/25/99 4 Technologies demonstrated cumulative
  - 2 Technologies in progress (estimated completion 6/30/99)
  - 3 Technologies approved for demonstration

PATH FORWARD FOR PROJECT COMPLETION

- Change our approach to look more for decontamination, demolition, and recycling technologies
- Complete the work we have planned
- Get more technologies in the pipe line for testing when the facilities are available
- Continue strong emphasis on deployment of these technologies at INEEL and other DOE sites
- Look hard at EPRI needs/cooperation
- Take a new look at suitable foreign technologies
- Like a winning football coach says at the half-time interview, “We will make a few small adjustments and just keep playing our game.”


Technology Application Distribution
COPPER RECYCLE
ALY ANAL
Recycle
12%
SSWPS
Waste Disposal
6%
PSM/RUCS
Dismemberment
12%
En-Vac/PSM
Decontamination
12%
EXCEL/ALY ANAL/PSM/RUCS
Dismantlement
24%
RUCS/LPA/EMR/ ALY
ANAL/PCB ANAL/PSM
Characterization
34%